

## REPORT ON ELECTRIC LIGHTING INSTALLATION. No. 7483.

Port of Belfast Date of First Survey 22-9-14 Date of Last Survey 5-1-15 No. of Visits 25  
 No. in on the Iron or Steel S.S. EBRO Port belonging to Belfast  
 Reg. Book Built at Belfast By whom Wickham Clark & Co. Ltd. When built 1915  
 Owners Royal Mail S. P. Co. Owners' Address London  
 Yard No. 333 Electric Light Installation fitted by Sunderland Forge Co. Ltd. When fitted 1915

**DESCRIPTION OF DYNAMO, ENGINE, ETC.** 4 Main Generating Sets - each consisting of compound, open-type steam engine, direct coupled to compound wound multipolar dynamo, on combined bed plate.  
1 Emergency Set consisting of Oil Engine, direct coupled to compound wound dynamo  
 Capacity of Dynamo Main 318 Amperes at 110 Volts  
Emergency 109 Amperes at 110 Volts, whether continuous or alternating current Continuous  
 Main dynamo in Engine Room.  
 Where is Dynamo fixed Emerg. " House on boat deck Whether single or double wire system is used Single  
 Position of Main Switch Board In Engine Room having switches to groups 16 of lights, &c., as below  
 Positions of auxiliary switch boards and numbers of switches on each ① At top of Engine casing for emergency lights, 10 switches  
② In Chartroom for Navigation Lights, 12 switches. ③ Saloon Entrance Port, 17 switches. ④ Saloon Entrance Starboard, 17 switches. ⑤ Smokers room Entrance, 24 switches. ⑥ Forward Bridge Deck, 17 switches.  
 If fuses are fitted on main switch board to the cables of main circuit Yes and on each auxiliary switch board to the cables of auxiliary circuits Yes and at each position where a cable is branched or reduced in size Yes and to each lamp circuit Yes  
 If vessel is wired on the double wire system are fuses fitted to both flow and return wires or cables of all circuits including lamp circuits —  
 Are the fuses of non-oxidizable metal Yes and constructed to fuse at an excess of 100 per cent over the normal current  
 Are all fuses fitted in easily accessible positions Yes Are the fuses of standard dimensions Yes If wire fuses are used are permanent instructions fitted on or near each switch board giving particulars of proper size of fuse for each circuit Yes  
 Are all switches and fuses constructed of incombustible materials and fitted on incombustible bases Yes

Total number of lights provided for 1325 arranged in the following groups:—  

A	62 lights each of	Sixteen candle power requiring a total current of	13.6 Amperes
B	173 lights each of	" candle power requiring a total current of	35.8 Amperes
C	166 " " "	" " " " " " " "	33.8 " "
D	230 lights each of	" candle power requiring a total current of	47.0 Amperes
E 4 @ Same + 194	" " " "	" " " " " " " "	64.8 " "
F	250 lights each of	" candle power requiring a total current of	62.0 Amperes
G	90 " " "	" " " " " " " "	18.0 " "
H 10 Arcs + 48	lights each of	" candle power requiring a total current of	124.0 Amperes
I	112 " " "	" " " " " " " "	50.0 " "
J Wireless	lights each of	" candle power requiring a total current of	27.0 Amperes
Also 6 Motor circuits		each requiring an approx current of	107.0 " "
2 Mast head lights with	1 lamp each of	32 candle power requiring a total current of	2.0 Amperes
2 Side light with	1 lamp each of	32 candle power requiring a total current of	2.0 Amperes
10 Arc lamps + 24 Cargo lights of		32 candle power, whether incandescent or arc lights	Both Fitted

If arc lights, what protection is provided against fire, sparks, &c.

Glass Globes & Strong Galv<sup>d</sup> Iron wire Guards

Where are the switches controlling the masthead and side lights placed In Chartroom on Bridge

**DESCRIPTION OF CABLES.**

Main cable carrying	318 Amperes, comprised of	61 wires, each	12 S.W.G. diameter,	0.500 square inches total sectional area
Branch cables carrying	107 Amperes, comprised of	19 wires, each	14 S.W.G. diameter,	0.0937 square inches total sectional area
Branch cables carrying	6 Amperes, comprised of	7 wires, each	20 S.W.G. diameter,	0.007 square inches total sectional area
Leads to lamps carrying	1 Amperes, comprised of	7 wires, each	25 S.W.G. diameter,	0.0022 square inches total sectional area
Cargo light cables carrying	10 Amperes, comprised of	114 wires, each	38 S.W.G. diameter,	0.003192 square inches total sectional area

**DESCRIPTION OF INSULATION, PROTECTION, ETC.**

Tinned Copper Conductors, insulated with pure & vulcanising India-Rubber, taped & vulcanised together & finished as follows:— IN ACCOMMODATION:— Lead-covered & braided overall.

IN ENGINE ROOM & WHERE EXPOSED TO WEATHER:— " " " " Armoured & braided overall.

Joints in cables, how made, insulated, and protected

No joints

Are all the joints of cables thoroughly soldered, and the flux used not containing acids or other corrosive substances — Are all joints in accessible positions, none being made in bunkers, cargo spaces, or spaces which may at any time be used for carrying cargo, stores, or baggage —

Are there any joints in or branches from the cable leading from dynamo to main switch board No

How are the cables led through the ship, and how protected Lead-covered, armoured & braided cables securely fastened to beams &c with galvanised iron clips & 3/8" dia. brass screws

DESCRIPTION OF INSULATION, PROTECTION, ETC.—continued.

Are they in places always accessible Yes

What special protection has been provided for the cables in open alleyways or where exposed to weather or moisture  
Cables are lead-covered, armoured & braided overall

What special protection has been provided for the cables near galleys or oil lamps or other sources of heat Lead-covered, arm'd, braided

What special protection has been provided for the cables near boiler casings " " " "

What special protection has been provided for the cables in engine room " " " "

How are cables carried through beams Through holes bushed with fibre through bulkheads, &c. Thro' water-tight brass glands

How are cables carried through decks " deck tubes, made water-tight.

Are any cables run through coal bunkers Yes or cargo spaces Yes or spaces which may be used for carrying cargo, stores, or baggage Yes

If so, how are they protected Lead-covered, armoured & braided

Are any lamps fitted in coal bunkers or spaces which may at times be used for cargo, coals, or baggage Yes

If so, how are the lamp fittings and cable terminals specially protected Glass globe & strong brass guard fitted

Where are the main switches and fuses for these lights fitted In Engine Room

If in the spaces, how are they specially protected —

Are any switches or fuses fitted in bunkers No

Cargo light cables, whether portable or permanently fixed Portable How fixed Attached to heavy brass water-tight plugs & sockets

In vessels fitted on the single wire system, how is the dynamo terminal fixed to the hull of vessel Sweated into heavy brass sockets & bolted to beam in engine room

How are the returns from the lamps connected to the hull Sweated to brass washer & connected to hull by 3/8" brass screw

Are all the joints with the hull in accessible positions Yes

Is the installation supplied with a voltmeter Yes, and with an amperemeter Yes, fixed in Engine Room

VESSELS BUILT FOR CARRYING PETROLEUM.

In vessels built for carrying petroleum, are all switches and fuses fitted in positions not liable to the accumulation of petroleum vapour or gas —

Are any switches, fuses, or joints of cables fitted in the pump room or companion —

How are the lamps specially protected in places liable to the accumulation of vapour or gas —

The copper used is guaranteed to have a conductivity of not less than that of the Engineering Standards Committee's standard, and the wires are protected by tinning from the sulphur compounds present in the insulating material.

Insulation of cables is guaranteed to have a resistance of not less than 2500 megohms per statute mile at 60° Fahrenheit after 24 hours' immersion in water, the test being made after one minute's electrification at not less than 500 volts and while the cable is still immersed.

The foregoing statements are a correct description of the Electric Light installation fitted by us on this vessel and we declare that it is at this date in good order and safe working condition.

Electrical Engineers

Date January 4, 1915

COMPASSES.

Distance between dynamo or electric motors and standard compass 200 ft

Distance between dynamo or electric motors and steering compass 195 "

The nearest cables to the compasses are as follows:—

A cable carrying	Amperes	feet from standard compass	feet from steering compass
5.8	12	10	10
0.5	3	3	3
1.0	6	8	8

Have the compasses been adjusted with and without the electric installation at work at full power Yes

The maximum deviation due to electric currents, etc., was found to be 1/2 degrees on all course in the case of the standard compass and 1/2 degrees on all course in the case of the steering compass.

Builder's Signature. Date

GENERAL REMARKS.

This installation is of good description and has been fitted in accordance with the Rules

It is submitted that  
this vessel is eligible  
for the RECORD. Elec. light.

R. F. Bennett  
Surveyor to Lloyd's Register of British and Foreign Shipping.

Committee's Minute TUE. JAN. 12, 1915

THE SURVEYORS ARE REQUESTED NOT TO WRITE ACROSS THIS MARGIN.